IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF NEW YORK

IN RE TERRORIST ATTACKS ON SEPTEMBER 11, 2001	CIVIL ACTION NO. 03 MDL 1570 (GBD)
FIONA HAVLISH, in her own right and as Executrix of the ESTATE OF DONALD G. HAVLISH, JR., Deceased, *et al.*, v. THE ISLAMIC REPUBLIC OF IRAN *et al.*	CIVIL ACTION NO. 03-CV-9848 – GBD

PLAINTIFFS' DAMAGES INQUEST MEMORANDUM

Exhibit C

Qualifications, Other Deposition Testimony

I am a physician licensed in the State of Maryland and a Board Certified Psychiatrist (Certified by the American Board of Psychiatry and Neurology). I retired from the United States Navy on 1 July 2003 at the rank of Rear Admiral (two stars/0-8) after more than 27 years of active service. My credentials and experience are set forth in the curriculum vitae, attached hereto.

Compensation

I am being paid $300 per hour. In regards to this specific case, I was first retained by the Mellon, Webster and Shelley Law Firm on 27 January 2012.

Prior Expert Testimony

Within the last seven years I have testified by deposition in a number of other cases for the Wolk Law firm (Philadelphia) and in the 6 years before that in a Navy Inspector General investigation regarding a past Navy Surgeon General. I have had no trial testimony within that time frame, but was the presiding officer at numerous (too numerous to count) "Non Judicial Punishment" proceeding and was the Convening Authority for several Courts Martial. I was also the senior Navy Medical Department Representative in the investigation conducted by U.S. Naval authorities into the accidental shooting down of an Iranian Airbus by the USS Vincennes on 3July 1988.

Documents, Interviews, Reports, Correspondence and Materials Used In The Formulation of Opinions and Findings

My Experience, Background, Education and Training

Review of documents and reports pertaining to the events of 11 September 2001

Current Professional Literature Reference List (including Journal Articles and Reference Texts.

C/o Thomas Mellon, Jr., Esquire
Mellon, Webster & Shelley
87 North Broad St.
Doylestown, PA 18901

Re: Havlish, et al. v. Bin Laden and the Islamic Republic of Iran, et al.

Statement: The following report constitutes a summary of the pertinent facts and findings, and my professional opinion regarding this case. Specifically, I have been requested to evaluate the records and assess the degree and nature of the physical and psychological suffering experienced by victims of the 9/11 attacks and the lasting psychological impact on survivors and loved ones. In preparing the report, I have reviewed all the available documents, reports, and records. I have drawn upon my extensive clinical experience and knowledge of the medical literature regarding the physiology and psychology of fear, severe pain, trauma, and the enduring effects on survivors, family, and friends.

Case History: In essence, Islamic terrorists hijacked four large commercial passenger planes fully loaded with sufficient fuel for a transcontinental flight and used these as improvised missiles to launch an attack against targets within the United States of America with high symbolic and cultural values. Specifically, they crashed them into the two towers of the World Trade Center in New York City, the Pentagon in the Washington, D.C. area, and into a field in Shanksville, PA., (The latter has since been determined to have targeted either the White House or the Capitol Building.) The attacks left 2,996 people dead and thousands more injured; huge numbers with permanent disabling conditions. The psychological toll amongst the survivors and loved ones is part of the enduring legacy of this tragedy. The express purpose of this "operation" was to achieve the highest possible human toll in terms of lives lost, injuries sustained and lasting psychological trauma. It also sought to maximize human suffering through the incredibly cruel and horrific means of death and the prolongation of that suffering. Particularly vicious was the public nature of the victims' agony, which was to be seen and felt by loved ones and would become indelibly imprinted in their psyche, with devastating consequences.

Backgound: As we seek to understand the intensely personal experiences of the victims, it is perhaps necessary that we review the neurophysiology and psychology of extreme fear and impending doom. The so-called "fear circuit" in the brain has its origins in a central part of that organ called the *amygdala*. Specific neural pathways which mediate the feelings of intense dread, anxiety, fear and panic emanate downward from the central amygdala. These systems and responses are "not speculative or fanciful," and "are experimentally reproducible." (Panksepp, 1998). The physiological response to fear (in particular extreme fear) includes an increased heart rate (sometimes feeling as if your heart was going to "jump out of your chest"), elevated blood pressure, drying of the mouth, trembling, sweating, blanching, feelings of faintness, nausea and vomiting, and a general homeostatic disregulation As the threat continues, there are hormonal

changes as cortisol and adrenalin begin to surge through the system, causing tunnel vision and making the victim feel increasingly confused, disorganizing thought processes further and impairing fine motor control and hearing faculties. If there is no relief, then loss of control of sphincters ensues, with urinary incontinence and involuntary defecation. Ultimately, "dying of fright," is a very real physiological possibility, particularly among the weaker or infirm victims. For some of the victims, these reactions were infinitely and cruelly compounded and exacerbated by extreme and unrelenting pain from physical injuries of all types, including severe burns, crush injuries, fractures, traumatic amputations, disembowelments, and pulmonary complications from smoke and toxic fumes which inflame the inner lining of the lungs and interfere with breathing and respiration.

The psychological effects of extreme fear and fright are equally dreadful. Overwhelming fear leads to overwhelming anxiety, which many have described as feeling "near death." Subjectively, overwhelming anxiety is the most intense and dreadful feeling a human being can experience. Unrelenting, extreme anxiety leads to a general cognitive "meltdown," Once "flight or fight" becomes clearly impossible, the mind is, for all intents and purposes, immobilized. This "quiescence" had evolutionary value in order to freeze the individual in an unexpected encounter with a dangerous predator, but in the modern world it compounds the dangers and threats surrounding the individual. Quiescence does not imply merciful "numbness," only a physical impossibility to react to the threat. Some authors often refer to the "parallel mind of fear." Another consequence of this type of overwhelming stress is "tachypsia." As if experiencing the aforegoing was not enough, nature compounds the pain by subjectively slowing time down. What may transpire over the course of a few seconds may be experienced as happening in very slow motion, thus prolonging the agony. Extreme fear and anxiety is an experience that very few of us can relate to, but, from the descriptions above, we can at least obtain a glimpse into the tortured and desperate minds of the victims.

A further word is also in order regarding the amygdala and the "fear networks." The signals from the amygada represent inaccessible learned memories (and possibly inherited instinctual associations) and the body and brain's response is immediate and impossible to resist. It is said that the signals from the amygdale trump all other higher cognitive functions. The only way that serious alarm signals from the "fear network" can be held in some abeyance is through intense and repetitive training, such as the military, law enforcement, and rescue personnel undergo. (for ordinary minor "threats" the frontal lobes "reassure" the amygdala that all is under control and the fear response abates) Responses to severe threats are then processed through prefrontal and hippocampal circuitry, also at a preconscious level. These artificially ingrained behaviors then take front and center stage automatically in a threat situation. It explains why rescue personnel of all types were able to perform heroically despite experiencing (physically and subjectively) exactly the same horrible threats to their life and sanity.

United Airlines Flight 175 and American Airlines Flight 11:

Both flights originated in Boston and were full of fuel for the transcontinental flight to Los Angeles. AA 11 departed Logan at 08:20 in the AM with 11 crew, 53 passengers and (unbeknownst to them) 5 Islamic terrorist determined to immolate themselves, the passengers and crew, and thousands more on the ground, all in the name of Islam. At approximately 08:14, as the aircraft passed 25,000 ft, the terrorists stabbed two flight attendants and slashed the throat

of a business class passenger who attempted to assist the latter. They then gained entrance into the cockpit through means unknown and seized control of the aircraft. They threatened passengers and crew with detonating a bomb and also used Mace and/or pepper spray for emphasis. Two flight attendants (Betty Ong and Madeline Sweeny) contacted the ground via cell phone and were able to describe the on-going situation. At 08:18 the plane entered a "rapid descent" and began to move erratically; at 08:19, Ms Sweeny stated "we can't breathe" (apparently because of the Mace or pepper spray being used). Finally at 08:44 Ms Ong reported that "We are flying very, very low! We are flying way too low! ***Oh my God, we are way too low!!"*** A few seconds later she was consumed by the exploding fireball resulting from the high speed impact with the North Tower of the World Trade Center.

UA 175 also departed Logan Airport in Boston en route to Los Angeles with 9 crew, and 51 passengers, not including 5 terrorists. Takeoff was noted at 08:14 and it reached its cruising altitude of 31,000 feet by 08:33. Sometime after 08:22 the terrorists attacked, stabbing a flight attendant and killing both flight crewmembers. Cell phone reports from two passengers and a flight attendant revealed a similar threat of a bomb and the use of Mace. There was some initial talk amongst the passengers of taking action against the hijackers, but it did not lead to fruition. At 09:00 a passenger aboard UA 175 (Peter Hanson) called his father to say goodbye. Among his last words were *"Its getting very bad on the plane……passengers are throwing up and getting sick…..The plane is making jerky movements….I think we are going down……I think they intend to fly to Chicago or someplace and fly into a building……**My God…..my God!!"*** Immediately thereafter, he and all aboard were thrust into oblivion as the plane was flown into the South Tower. The time was 09:03.

It is clear that both planes descended extremely rapidly, intentionally picking up speed to maximize destructive energy. They were flying very erratically, particularly AA 11 as it flew among the skyscrapers of New York City. Videos of AA 11 capture the sound of the engines as they roar to full throttle just before impact. UA 175 is seen initiating a hard roll and turn to the left as the pilot tries to ensure that the plane would strike the intended target. It is difficult to estimate the induced "G" forces, but they must have added significantly to the victims' dread and terror in those last few moments. Noteworthy is the "quiescence" (as noted in the prior section) of most of the passengers in the initial moments of the hijacking, followed by confusion and inability to focus and develop a plan of action, despite awareness that destruction was imminently at hand. The trained cabin crew did a commendable job under unbelievably stressful conditions and was able to suppress some of the signals from the amydala and the "fear network," but as their training did not involve action, they remained essentially passive reporters of their own demise. Mr. Hanson provides the most harrowing description of the conditions undoubtedly aboard both aircraft. *"Getting very bad……passengers are getting sick and throwing up…..I think we are going down….My God…..my God!!"*

Although the aircraft jerky movements may have contributed to airsickness in a few isolated cases, we know from experience that the bad weather conditions will not produce the kind of mass "sickness" described by Mr. Hanson. He is describing the physiological end result of absolute and abject terror, the kind that makes up our very worst nightmares. Of note is both Ms Ong's and Mr. Hanson's call to God as their final words. They knew with absolute certainty that this would be the end of their existence; their hopes and dreams, everything they were and had been, and even at the absolute end, fear of the "great unknown." All of those aboard were certainly exquisitely aware that there would be no deliverance and of the fear that there would

only be, for however brief a moment, only unimaginable pain and torment. A moment prolonged by the subjective slowing of time common in these situations.

American Airlines Flight 77

AA 77 departed Washington Dulles enroute to Los Angeles at 08:10. Aboard were 6 crew and 58 passengers (6 of them hijackers). The aircraft reached its assigned cruising altitude of 35,000 feet at 08:46. At 08:51 the flight made its last reported radio communication. Sometime after that, the hijackers assumed control although there were no reported stabbings, bomb threats, or use of Mace. The crew and passengers were herded back into the rear of the plane where they apparently remained for the remainder of the flight. This appears to be an extreme form of "quiescence" as the group had been informed via cell phone by family members that hijacked planes had been used to crash into the Twin Towers. The plane descended rapidly, and 5 miles west-southwest of Washington D.C., initiated a 330 degree turn at very low altitude and a high rate of speed. The pilot then advanced the throttles to full power and dove into the Pentagon at approximately 530mph (09:37). Through all these evolutions the victims were also subjected to severe buffeting, twisting and diving; all the time knowing what was in store for them. They knew what had happened in New York and could see that the flight path was intended to be a suicide run. They must have experienced a paralyzing terror which extended for all of at least 43 minutes. This was sufficient time for them to have run through the entire gamut of physiological symptoms and psychological terror. The sense of helplessness, the loss of all hope during those tumultuous final moments compounded by real physical "sickness," and the realization that only a horrific death awaited them seems beyond human comprehension.

United Airlines Flight 93

UA Flight 93 took off from Newark, New Jersey at 08:42. There were 8 crew and 33 passengers, in addition to the 4 hijackers. The events of the following 1 hour and 20 minutes differed significantly from the other hijackings. First, the plane flew for almost 42 minutes, undisturbed, before the actual takeover took place. When it did, the plane was flying over relatively open spaces so that the immediacy of the situation was not as impacting as those hijackings that occurred close to their targets and left the victims without realistic options.

The terrorists took control of the cockpit after an apparent vigorous fight with the flight crew. At least 2 crew members were reported either killed or severely wounded. Despite a bomb threat, the passengers and surviving crew members did not believe that to be real. There was no use of Mace or pepper spray and it also became obvious they did not posses firearms. Furthermore, the terrorists were fewer in number (4) that in the other affected flights. Numerous cell phone calls to and from relatives kept the victims apprised of what was going on and at the right moment in time leaders appeared to keep the group focused and motivated. Although the situation was dire, it did present options for potential survivability, and they acted quickly upon them. In reality, their cause was doomed because the terrorist were willing to crash the airplane if threatened by crew or passengers, and it would only take 1 or 2 seconds to place the aircraft in an untenable flight regime.

When the passengers revolted, the "pilot" began to roll the aircraft violently right and left to throw them off balance. In addition, he began a series of desperate up and down pitching movements. Recordings from the cockpit documents shouts and screams, crashing sounds from

the adjacent galley, and evidence of a tumultuous, desperate, frenzied struggle right up to the moment of impact. In the final seconds the pilot pulled the control yoke all the way to the right, rolling the aircraft onto its back and putting it into a terminal dive, impacting the ground near Shanksville, PA at 580 mph. The time was 10:02.

Those last few minutes must have seemed like a scene from a horror movie. The desperation and fear of impending doom made worse by the realization that all their efforts would come to naught. The violent maneuvering certainly caused injuries beyond those that may have been inflicted by the terrorists. Alternating cycles of weightlessness and crushing "Gs," being smashed from wall to wall and from floor to ceiling, loss of orientation, and the final roll and dive to the ground must have generated extreme physiological responses. By this point most of the passengers would have been beyond rational thought. Some in the back would have been paralyzed by overwhelming and unrelenting fear and stress, while most of those involved in the assault would have added components of unfathomable rage and anger to their terror; a truly horrible way to die. It is hoped that in the last instants of their lives they understood that at least they had prevented a much larger catastrophe.

World Trade Center (WTC) and the Pentagon Building

Although the specifics of each incident differed, the impact zones will be addressed in a single section for the sake of clarity and conciseness. The majority of the casualties on 9/11 occurred on the ground in New York, particularly inside the so-called "twin towers" of the WTC. When AA 11 flew into the North Tower, for example, it hit between the 93rd and 99th floors, inclusive. According to the official 9/11 Commission report, the ensuing "jet fuel fireball" "shot down at least one bank of elevators" and "exploded onto numerous lower floors," down to, and including, the West Street lobby level and the B4 level, four stories below ground level. Reportedly, the burning fuel "immediately created thick, black smoke that enveloped the upper floors" and affected areas.

Death by immolation ranks as one of the greatest fears among humans and animals alike. The need to escape the holocaust must have generated a visceral panic response amongst all concerned. For some, tragically, severe traumatic injuries prevented their immediate escape from the flames and could not but suffer the intense heat and unbearable agony that accompanies such a fate. The lack of oxygen (used up quickly by the flames) added a measure of additional suffering as burning was accompanied by asphyxiation. Searing hot, noxious chemicals were inhaled by victims near the fires, producing severe and extremely painful irritation of the lining of the lungs. Death by fire itself involves initial symptoms of heatstroke, followed by thermal decomposition of organs, sloughing of the skin, bursting of the eyeballs, and finally massive loss of blood and body fluids. Such a death is neither rapid nor merciful.

Those trapped in elevators surrounded by fire, particularly the ones located in shafts through which the fireball descended, were even unluckier. They literally sat in red hot ovens and probably slowly cooked and asphyxiated to death. The mind cringes at such prospects and explains why so many victims facing death by fire chose to leap from the buildings to certain death. Approximately 200 persons are known to have chosen to end their lives in this manner rather than face the extreme torture of death by flames.

Those who leapt were subjected to another form of torture and agony. The terminal velocity of a 170 lb human being is about 120 mph. This translates into approximately 176 ft per second. Falling over 1000 ft will require between 5 and 6 seconds, an eternity when you are

facing certain death. Subjectively, tachypsia will prolong the fall and permits the victim to be fully conscious of the absolute certainty of his or her death, to experience the rushing of air, the sudden feeling of weightlessness followed by rapid acceleration downwards, and perhaps tumbling end over end as they rush towards the ground. Where they to open their eyes they could anticipate the exact moment of the cessation of the self. And yet, cruelly, there is enough time to think of those you left behind, to feel regret and to feel sorrow.

After the initial impact, explosion, and fireball, survivors were faced with bleak prospects indeed. In general those in the floors above were trapped with no place to go. Debris and nonexistent or non apparent means of egress meant that their fates were sealed. Instinctually, many headed upwards towards the roof. Some thinking that perhaps a helicopter rescue was still possible. In the event, high winds from the blazing inferno below made that operation an aeronautical impossibility. When they reached the top, they found that the doors were in fact locked. The situation was desperate; neither flight nor fight was possible. The flames continued to surge from below, consuming some and forcing others into a desperate death leap. Death WAS certain. Only the method was yet to be determined. At this point all hope was lost and the psychological and neurophysiologic "storm" described in the background section was inevitable for many, if not most. Background sounds and snatches of conversations gleaned from brief cell phone conversations paint a picture of confusion, irrational comments ("call 911 and tell them we are under the desks"), and terror. For the occupants of the South Tower, their torture lasted 56 minutes before the last, dramatic act; the collapse of the building dragging all remaining survivors down to a fiery and crushing death. The North Tower collapsed after 75 minutes, merely prolonging the inevitable. The victims inside the Pentagon were spared the agony of being trapped beyond the reach of rescue services, but in every other way, the manner and extent of their suffering was similar in every way.

Survivors and Surviving Family Members

It appears as if every conceivable horrific and gruesome way to die was present on that day. However, the dead will suffer no more. For the survivors and family members, however, 11 September 2001 was not the end of an incredibly tragic chapter in their lives, but rather the beginning of long lasting, intense feelings of grief, guilt and regret. For extremely large numbers, this is translated into significant and disabling psychopathology. The scientific literature reveals that 67% of victims exposed to mass violence become severely (psychologically) impaired, as opposed to only 39% of those exposed to a technologically based disaster, or 37% of those exposed to a natural disaster. (Holloway et al,1997; North et al, 1999) Psychopathology runs the gamut from Major Depression, General Anxiety Disorder, Sleep Disorders, Substance Abuse, and Adjustment Disorder, to Post Traumatic Stress Disorder. There is also some evidence that among children (whether primary victims or experiencing traumatic separation and dislocation as a result of the disaster) it may contribute to various forms of ASD (Autism Spectrum Disorder). (Ursano et al, 2007)

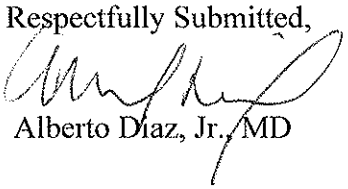
In addition, over 18,000 were left with significant lasting physical health effects. A study in 2010 found that **all** rescue workers had measurable, impaired lung functioning as a result of exposure to the smoke and dust generated at the incident sites. Significantly, 30-40% reported no improvement of symptoms after almost 10 years. (Grady et al, 2010) Ominously, there is evidence that exposure to these sites may have also contributed to fetal abnormalities and congenital problems amongst pregnant women present at the WTC, either as rescuers or as

congenital problems amongst pregnant women present at the WTC, either as rescuers or as survivors. (CCCEH Study, 2006)

Conclusion

I attest to a reasonable degree of medical certainty that the suffering of all the victims on 11September 2001 was gruesome and painful in the extreme, and that the majority of survivors and surviving family members will continue to relive the events of that fateful day for a significant portion of their natural lives. For many loved ones, modern communications (cell phones) enabled them to share the experience from a distance; experiencing the horror, but not the physical suffering. Thus, grief becomes compounded by guilt, and enduring – and very real and vivid – memories of the tragedy. Unfortunately they are condemned to keep reliving the experience through the unabated media coverage that continues to this day. *Many, if not most will require ongoing psychological/psychiatric intervention.* The effects on children who lost parents on that day are immeasurable. The effects of 9/11 will thus continue across generations and for decades to come. Finally, the tragedy has become imprinted on our national psyche, and our lives have all been negatively affected in one way or another. It contributed directly to our involvement in two wars and the consequent additional death and suffering. Long lines at the security checkpoints in airports, ubiquitous government surveillance, suspiciousness of our own Islamic countrymen, etc, are all ways in which we as a nation may have lost our innocence.

Respectfully Submitted,



Alberto Diaz, Jr., MD

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